

REMARKS:

Claims 1, 3-8, 11-20, 22, 23 and 28-48 are in the case and presented for consideration.

The Commissioner is authorized to charge deposit account number 14-1431 in the amount of \$400.00 to cover one additional independent claim beyond three and twelve additional claims beyond those already paid for. The Commissioner is also authorized to credit or charge deposit account number 14-1431 with any under or overpayment.

The claims have been amended in a manner that is believed to patentably distinguish the invention over the prior art for the following reasons.

Claim 1 has been amended to eliminate the requirement that the combustion air being injected into the furnace have a temperature of not less than 800°C since the claim now includes the regenerative pre-heating step of canceled claim 2. Claim 1 has also been limited to include features found in former apparatus claims 24 and 26 but in the form of method limitation, and which, in combination with the other features of claim 1, are believed to define an unobvious invention over the Tanaka et al. patent, U.S. patent 5,441,403.

Claims 2-8 depend from amended claim 1 and further distinguish the method of the invention over the prior art.

The invention is based on a novel and unobvious invention which solves the various problems associated with high-temperature combustion. These problems are disclosed in the present application at page 3, line 16 to page 4, line 23 and page 5, line 12 to page 6, line 24 as well as elsewhere in the application. This includes problems of mixing fuel with combustion air having a high-temperature which is not less than the self-ignition temperature of mixed gas and is close to the combustion exhaust gas temperature.

The method of claim 1 and its dependent claims 2-8 can only be realized when the

skilled artisan is taught the knowledge and concepts disclosed in the present application.

The Examiner considers the ratios in claim 1 (formerly in claims 24 and 25) to be "simply a matter of engineering choice and is not regarded as patentably distinct." This comment is made without support however, and contradicts the disclosure of the present application which explains that in fact the selection of these parameters improves the method of the invention and overcomes problems that are known in the prior art and which Tanaka has not solved.

It is believed that the Examiner has therefore not made a *prima face* case of obviousness and further is requested to provide a reference showing that the specific parameters defined are matters of simple engineering choice, or if the Examiner is relying on information within his own knowledge, the Examiner is requested to provide an affidavit under 37 C.F.R. 1.104(d)(2).

Newly added independent method claim 42 is similar to method claim 1 except that it includes the features of claims 1, 2, 25 and 27, again specifying parameters that have been found to solve the problems of the prior art in a manner which is believed to be unobvious over the prior art.

Claims 43-49 further distinguish the invention over the prior art and are likewise believed to be in condition for allowance.

Amended apparatus claim 11 and its dependent claims 12-20, 22, 23 and 28, have been limited to include the subject matter of claims 11, 21, 24 and 26, but to eliminate the limitation concerning the minimum temperature for the injected combustion air. While it is understood that some of these features involve parameters, a parameter can only be met with specific structures so that the limitations in claim 11 are believed to be clearly structural and thus represent distinctions over the prior art.

Claim 21 was rejected as being obvious from a combination of Tanaka and U.S. patent 6,036,476 to Mitani et al. Claims 24 and 26 had been rejected as being obvious from Tanaka.

As with claims 1 and 42, claim 11 defines a specific structure observing certain parameters which had been found by the inventors to solve problems of the prior art which it is believed to not have been solved by Tanaka alone or in any obvious combination of Tanaka and Mitani. This includes regeneration as well as observing the parameters as with claims 1 and 42.

The claims dependent on claim 11 are believed to further distinguish the invention over the prior art.

New independent apparatus claim 29 is similar in scope to apparatus claim 11 but includes limitations found in claims 11, 21, 25 and 27 which are likewise believed to patentably distinguish the invention over the prior art. Dependent claims 30-41 further distinguish the invention over the references so that the application and all of the claims are now believed to be in condition for allowance.

The Examiner is respectfully invited and urged to telephone the undersigned if any matters remain which can be treated by telephone interview in the interest of reaching a conclusion to the prosecution of this case.

Favorable action is respectfully requested.

Respectfully submitted,



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